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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,683	02/04/2002	Lee Grodzins	2558/101	6999

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EXAMINER

THOMAS, COURTNEY D

ART UNIT PAPER NUMBER

2882

DATE MAILED: 09/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/067,683

Applicant(s)

GRODZINS ET AL.

Examiner

Courtney Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-38 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show a ring shaped radioactive source, a ring shaped holder and an energy detector residing within a ring as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 26 and 27 are objected to because of the following informalities: Claims 26 and 27 recite the configuration of a radiation source as being ring shaped and a detector residing within "the ring". It is unclear what applicants regard as the ring; therefore, the claims as written are ambiguous. Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 6, 8-10, 12, 13, 15, 22, 23, 25 and 29 are rejected under 35 U.S.C. §102(b) as being anticipated by King (U.S. Patent 4,283,625).

3. As per claims 1, King discloses an apparatus comprising: a single radiation source (i.e. Fig. 1, #14) emitting radiation having Rayleigh scattered intensities that overlap with

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characteristic X-rays of the test material (column 3, lines 41-45); an energy detector for receiving fluoresced radiation from the test material (i.e. Fig. 1, #s 22, 24) and electronics coupled to the energy detector for determining the composition of the test material based on at least upon the fluoresced radiation (i.e. Fig. 1; abstract; column 6, lines 14-18).

4. As per claims 5 and 12, King discloses an apparatus comprising a shield for the radioactive source (i.e. Fig. 1, #16) that isolates the detector from direct radiation exposure, except in the direction of the test material (see Fig. 1).

5. As per claims 6 and 29, King discloses an apparatus wherein the source is ^{241}Am (column 4, lines 31-32; column 5, lines 53-55).

6. As per claims 8 and 9, King discloses an apparatus wherein the 59.5 keV and 26.4 keV gamma rays and characteristic l-rays are used in determining test material composition (column 5, lines 49-68, column 6, lines 1-7).

7. As per claims 10, 22 and 23, King discloses an apparatus and method wherein the test material is a metal alloy (column 1, lines 17-20).

8. As per claim 13 and 25, King discloses an apparatus and method wherein the radiation of the radiation source interacts with a reactive material to produce photons that combine with the radiation of the source to increase the fluoresced radiation of the test material (column 5, lines 49-68, column 6, lines 1-7).

9. As per claim 15, King discloses a method comprising: a) providing a single radioactive material emitting both x-rays and gamma rays, wherein the radioactive material is ^{241}Am ; b) exposing the test material to the x-rays and gamma rays c) receiving the fluoresced radiation into an energy detector; and d) determining the composition of the test material in a processor based

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in part upon the received fluoresced radiation from the x-rays and gamma rays of the ^{241}Am (i.e. Fig. 1; abstract; column 6, lines 14-18).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2-4, 16, 17, 19-21, 28 and 32-38 are rejected under 35 U.S.C. §103(a) as being unpatentable over King (U.S. Patent 4,283,625) in view of Ahlquist et al. (U.S. Patent 3,953,127).

12. As per claims 2-4 and 28, King does not explicitly disclose an apparatus and method comprising electronics configured to compensate for Rayleigh scattering using a pure metal standard.

13. Ahlquist et al. disclose the use of electronics configured to compensate for Rayleigh scattering by using a pure standard (column 18, lines 56-66).

14. It would have been obvious to modify the apparatus of King such that it comprised electronics for compensating for Rayleigh scattering using a pure metal standard. One would have been motivated to make such a modification for the purpose of improving the signal to noise ratio of the apparatus by removing interference signals based on a pure standard as taught by Ahlquist et al. (abstract; column 18, lines 56-66). Examiner notes that the use of a pure metal standard relates to the type of sample under investigation as noted by King (column 4, lines 25-29).

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15. As per claims 16 and 17, King does not explicitly disclose a method that accounts for the fluorescent background of the Rayleigh and Compton scattering.

16. Ahlquist et al. teach a method wherein background information is accounted for due to the scattering of radiation (abstract; column 18, lines 56-66).

17. It would have been obvious to modify the method of King, such that it incorporated a method that accounts for the fluoresced background due to Rayleigh and Compton scattering. One would have been motivated to make such a modification for the purpose of improving the signal to noise ratio of the apparatus by removing the presence of interference signals as taught by Ahlquist et al. (abstract; column 18, lines 56-66). Examiner notes that both Compton and Rayleigh scattering contribute to overall background radiation intensity values present in fluorescence experimentation.

18. As per claims 19-21 and 32-38, King does not explicitly disclose a method accounting for Rayleigh scattering by subtracting a pure metal spectrum from the fluoresced spectrum of the test material.

19. Ahlquist et al. teach a method wherein background information is accounted for due to the scattering of radiation by using a pure standard (abstract; column 18, lines 56-66).

20. It would have been obvious to modify the method of King, such that it incorporated a method accounting for Rayleigh scattering by subtracting a pure metal spectrum from the fluoresced spectrum of the test material. One would have been motivated to make such a modification for the purpose of improving the signal to noise ratio of the apparatus by removing the presence of interference signals based on a pure standard as taught by Ahlquist et al. (abstract; column 18, lines 56-66).

21. Claims 11, 18 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over King (U.S. Patent 4,283,625) in view of Sayama et al. (US. Patent 5,062,127).
22. As per claims 11 and 24, King does not explicitly disclose an apparatus and method wherein the test material is a precious metal.
23. Sayama et al. disclose an apparatus wherein the test material is a precious metal (column 1, lines 5-11).
24. It would have been obvious to modify the apparatus and method of King, such that it incorporated a test material made of a precious metal. One would have been motivated to make such a modification for the purpose of determining the metal content of metallic materials and in particular to appraise the precious metal content of jewelry and other articles fabricated from precious metals, as taught by Sayama et al. (column 1, lines 5-11).
25. As per claim 18, King does not explicitly disclose a method wherein a resulting spectrum of fluoresced x-rays and gamma rays is analyzed to identify spectral peaks representative of elements found in the test material.
26. Sayama et al. disclose a method wherein the resulting radiation spectrum is analyzed to identify spectral peaks of the elements found in a test material (abstract, Figs. 7-16; i.e. column 7, lines 60-68).
27. It would have been obvious to modify the method of King, such that it incorporated the method step of Sayama et al. One would have been motivated to make such a modification for the purpose of accurately and non-destructively determining the content of a test material as taught by Sayama et al. (abstract, column 1, lines 5-11; Figs. 7-16; i.e. column 7, lines 60-68).

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28. Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over King (U.S. Patent 4,283,625) in view of Sackett et al. (1998).

29. As per claim 7, King does not explicitly disclose an apparatus wherein the source is ^{239}Pu .

30. Sackett et al. teach that the use of a radiation source is dependent on the type of element attempting to measure (p.3, last paragraph).

31. It would have been obvious to modify the apparatus of King such that it incorporated a ^{239}Pu source. One would have been motivated to make such a modification for the purpose of identifying elements responsive to the radiation emitted by ^{239}Pu as taught by Sackett et al. (p.3, last paragraph).

32. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over King (U.S. Patent 4,283,625).

33. As per claims 26 and 27, King does not explicitly disclose an apparatus wherein the radioactive source is ring shaped and the energy detector resides within the ring or wherein the radioactive source is held in a ring shaped holder and the energy detector resides within the ring.

34. King teaches a structure that ensures radiation emanating from a source, impinges on a test material, and the detector is sufficiently shielded from the radiation of the source (i.e. Fig. 1).

35. It would have been an obvious matter of design choice to provide an apparatus with a ring shaped source and a detector configured within the ring, since applicant has not disclosed that the shape of the source or the placement of the detector within the ring solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the configuration of King (Fig. 1).

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Allowable Subject Matter

36. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

37. As per claim 14, the examiner found no reference in the prior art that disclosed or made obvious an apparatus wherein the reactive material is rhodium.

Conclusion

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

39. EPA Method 6200 (May 1998) <http://www.niton.com/meth6200.html> Discloses detection factors, including analyte of interest, detector used, type and strength of excitation source, physical and matrix affects and inter-element spectral interferences.

40. NEWMOA Technology Review Committee Advisory Opinion Innovative Technology:
X-Ray Fluorescence Field Analysis
wysiwyg://77/http://www.epa.gov/region01/steward/ceit/xrfweb.html - Discloses an overview of the technology involving XRF.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (703) 306-0473. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305 3492. The fax phone numbers for the


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organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Courtney Thomas

August 31, 2002


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